In vitro fermentation of Acacia Senegal by Fecal Microbiota from lean donors to stimulate the growth of probiotic

ABSTRACT

Gum Arabic is believed to have many health benefits including prevention of gastrointestinal diseases. Prebiotic resist digestion in the upper gastrointestinal tract and allowed for stimulation of bacterial growth in the distal intestine and colon.The prebiotic properties of Acacia Senegal was studied using mixed cultures of human fecal bacteria from four lean individuals. The results obtained were compared with inulin as positive prebiotic control. Fermentation studies were carried out using anaerobic, pH-controlled faecal batch cultures, and the changes in the faecal microbial population were monitored at 0, 6, 12,24 and 36h by fluorescent in situ hybridization(FISH). Quantitative FISH results revealed that Bifidobacteriumspp. Bacteroidacea spp. And Lactobacillus spp. were selectively increased($P<0.05$) after the fermentation of Acacia Senegal by the fecal microbiota.Clostridium spp.,even have showed slight increase in fermentation of Acacia Senegal and inulin but was not significant. The stimulation of growth of probiotic bacteria was accompanied by a high production of acetate acid.The fermentation of Acacia Senegal may help to improve health through stimulation of bacteria growth which led to production of acetate. This study provides proof for the prebiotic effectiveness of Acacia Senegal, and the result showed that it might have a prolongedbifidogenic effect, thus could prevent certain types of diseases.

Keyword : Drugs delivery; Nanotechnology; Chitosan; Glutamic acid; FITC